Edutainment Based Mobile Phone Games for Health Communication in India

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Abstract: *Mobile learning is the convergence of mobile computing and e-learning. Mobile learning solutions are highly effective and mobile learning content delivery has been rated as a successful ICT based learning method for development communication and edutainment. As Tuberculosis have become serious health concerns in India. It is the youth that comprise the larger share of the patients afflicted by them. Several edutainment strategies using low cost mobile phones as media are being tried by national and international organizations to run awareness campaigns about these diseases. To study the effectiveness of the games, one game was selected- that was on Tuberculosis. The game was field tested with semi urban youth living in Bardarpur, Delhi. Semi structured interview schedules were used to collect data from the youth. An objective type awareness test on based on the information contained in the game was prepared and administered to the respondents before and after playing the games to assess any change in awareness about the diseases before and after playing the games. It was found that all the youth had played mobile phone games to entertain themselves and compete with their friends with in the privacy of their home or in public places as per their convenience. The mobile phone game was liked by a large number of respondents as they reported it was easy to play, very interesting and challenging and entertaining. Almost all the youth wanted to acquire these games in their own mobile phones and share them with their friends and family. The youth were not aware about the process of downloading such games in their phones. Analysis of the Awareness Test clearly indicated an increase in awareness about Tuberculosis after playing the games. The youth gave several suggestions to improve the games. New mobile phone edutainment games were suggested on health (particularly reproductive health), social issues, and environment and on topics from the school syllabus of the youth. The youth expressed a desire to participate in designing mobile phone games for edutainment.*

Keywords: *mobile learning, mobile phone games, Tuberculosis, health awareness, edutainment*

1. Introduction

1.1 Edutainment

According to Singhal and Rogers (1999), the word "edutainment" is a combination of 'education' and 'entertainment'. It involves the successful blending of learning with gaming concepts. It deepens understanding by introducing an element of fun for enhancing and retaining knowledge in an exciting and engaging way. Interactive edutainment games are an effective way of spreading messages and creating awareness by Play-and-Learn method. Edutainment means encouraging individual growth and development in a learning environment that commands and holds the emotional attention of the learners there by promoting retention of learning.

1.2 Games

Games are a creative expression of the human spirit through the creation of an activity that has an entertaining, instructive, and competing element. A game may be played by a single individual or require competing teams, it may involve physical and/or mental activity, have a concrete or loose set of rules and structure, may need some or all of the available resources and it always leads to an outcome. There is usually a winner and a looser and whether a participant belongs to one or the other side of this simple distinction makes all the difference in the world (Brown, 1999). There are several benefits of playing a game. Generally, a game consists of a goal that its players try to reach. It has a set of rules within which a person has to succeed in accomplishing

the desired objective (Quraishi, 2003). Games are a means of unwinding and are a learning mechanism for people of all age groups. Games not only help in family bonding but also help people to share their routine activities, recount their learning and address problems they are facing. This aids not just learning but the overall personality development as well (Khattar, 2008).

1.3 Mobile learning

Mobile learning (m learning) means learning and knowledge sharing that takes place when the learner is mobile (Prensky, 2004). M learning is the intersection of mobile computing and e-learning: accessible resources wherever you are, strong search capabilities, rich interaction, powerful support for effective learning, and performance-based assessment. This learning is independent of location, time and space (Quinn, 2000). Mobile learning is an ideal solution today as it facilitates learning anytime-anywhere. Mobile learning solutions are highly effective and mobile learning content delivery has been rated as a successful ICT based learning method.

1.4 Tuberculosis: The Status

India is home to over 3.4 million tuberculosis patients- about one-fifth of the global figure- making it the most TB prevalent country. Of these, 17% have developed multi drug resistance ie, MDR TB (WHO 2009). TB is becoming growing concerns in India. It is the youth that comprise the larger share of their victims. Several edutainment strategies using a variety of media are being tried by national and

international organizations to run awareness campaigns on these diseases. One such strategy is use of mobile learning through games. Digital games have been a popular pastime across the world since the 1970s. Their popularity has grown with the advancements in digital technology, mobile communication and the internet in the 1990s. Games are being used as innovative ICT products for reaching out to grassroot, under privileged and marginalized communities. Propagating development messages through games on mobile phones is an easy and cost effective way of accessing people and spreading messages using technology.

1.5 General objectives

To explore the range of mobile phone based edutainment games and field test some games as media of edutainment for youth.

2. Specific Objectives

1. To identify edutainment based mobile phone games available in the Indian market.
2. To prepare a catalogue of the mobile phone edutainment games collected.
3. To gain insights into the mobile phone gaming practices and preferences of youth.
4. To find out the perceptions of youth regarding use of mobile phone games for edutainment.
5. To assess the efficacy of Stop TB Cricket (edutainment based mobile phone game) in affecting the awareness of youth on Tuberculosis.

3. Methodology

Mobile phone edutainment games were collected after consulting agencies engaged in the development sector and mobile phone game developers. ZMQ Software Systems (IMT Manesar, Gurgaon, India) was found to be the only organization developing mobile phone edutainment games as part of its Corporate Social Responsibility initiative. All the games developed by ZMQ were analysed in terms of-edutainment issue, phone specifications required, source, process of installing, method of playing, delivery of messages, entertainment value and gaming experience were analyzed. A printed Catalogue was prepared after reviewing the games. It contained the following information about the games: Title, edutainment issue, year of launch, genre, developer, web link, connectivity, operating system, handset required, language and visuals. The game Stop TB Cricket could be downloaded in Hindi and was field tested on 80 youth (15-25 years, equal number of male and female) living in Badarpur, South-East Delhi. All the respondents were made to play the game on the same mobile phone to control variations of screen size, key pad navigation and font size. Semi-structured interview schedules were designed to seek the opinion and perceptions of youth in both the studies. Based on the messages appearing in the games awareness tests were prepared. These were administered to the respondents before and after playing the games to assess any change in their awareness.

4. Major Findings

Socio-Economic Profile of the Youth

All the respondents age was between 15-25 years as the sample of respondent were only youth. The sample comprised of equal number of males and females. About 50% of the youth were 10th class pass where as 37.5% of the youth were 12th class pass and only 8.75% were graduates and few were 8th class pass. A majority of the youth was students (85%) in schools and colleges and a large number of the remaining were working (11.25%).

Frequency of playing mobile phone games: Only 7.5% of the youth reported that they played mobile phone games every day, 5% played once a week and 6.25% played mobile phone games once in a month. A large majority (81.25%) played mobile phone games occasionally. Hence, all the respondents had played mobile phone games earlier.

Purpose of playing mobile phone games: Most of the youth (81.25%) reported that they played mobile phone games for entertainment and to pass time and the remaining for making their mind sharp.

Duration of playing mobile phone games: An average mobile phone gaming session of youth was less than 15 minutes (56.25%), 22.5% played the game for about 16-30 minutes, 10% played for 31-60 minutes and only 5% played for 1 hour or more at a stretch.

Place for playing mobile phone games: It was found that 70 % of the youth preferred playing mobile phone games at their home. They also played while travelling, sitting in a park or at friend's house.

Favorite mobile phone games: The youth liked a variety of mobile phone games. The most popular were sports based games (Cricket 61.25%, Car race 15% and Football 8.75%); followed by adventure games like (Snake 56.25%, Rapid roll 8%, Bounce 5%) and puzzles 15%.

Choice of brand for mobile phone gaming: The most preferred brand of handset for playing mobile phone games was reported to be Nokia (75%).

Price of mobile phone used: A large number of youth (63.75%) were found to be using mobile phones in the price band of Rs.1000-2000. The others were found to be using more expensive phones.

Method of acquiring mobile phone games: Most of the youth were aware that mobile phone games could be loaded through internet (33.75%) or by using Bluetooth technology (16.25%).

Problems encountered while playing mobile phone games: The most frequently encountered problems while gaming were reported to be low battery life (45%) and small buttons (28.75%). Other problems reported were small size of the screen, poor sounds and graphics.

Subject of Stop TB Cricket: Although a majority of the youth stated that the game they played was about TB (80%) but the remaining mentioned that the game was on cricket.

Time taken to gain proficiency in playing: A majority of the youth took only 1-2 times to play the game and develop proficiency in it.

Ease of playing the game: About three-fourth of the youth (73.75%) found the game easy to play.

Ease of understanding the instructions for playing the game: Nearly three-fourth of the youth (73.75%) reported that they found the instructions for playing the game clear.

Problems encountered while playing Stop TB Cricket: Although 65% of the youth did not report any problem in playing the game, however, the others reported problems related to size of buttons on handset, difficulty in understanding some instructions and some messages.

Appeal of the game: A large number of the youth (75%) found the game very appealing.

Language of the Messages: It was found that 36.25% respondents found the messages in the game very clear, 57.5%- clear and the remaining found them unclear.

Effectiveness of 'Stop TB Cricket' in enhancing awareness about Tuberculosis: The awareness test comprised of 20 questions. Each question was given 1 mark. The average score on the awareness test before playing the game was 10.75 and increased to 12.5 after playing the game. Hence, the average gain in score was 1.75. The gain in average awareness score was found to be more in female respondents (2.08) as compared to male respondents (1.80). The lowest score before playing the game was 6 and the highest score before playing the game was 15. The lowest score after playing the game was 9 and the highest score was 16. The minimum gain in score after playing the game was 1 and maximum was 7. A few respondents (5%) did not show any change in awareness score after playing the game.

Willingness to acquire edutainment based mobile phone games: Nearly all the youth (93.75%) expressed willingness to acquire edutainment based mobile phone games.

Issues suggested for making edutainment based mobile phone games: The youth suggested that mobile phone games should be prepared on health (83.75%), social issues (12.5%) and environment (7.5%).

Willingness to share information about edutainment based games: All the youth expressed willingness to share information about edutainment based mobile phone games. The suggested various ways for creating awareness about them in the community: sms on mobile phones (28.75%), street theatre (28.75%), internet (22.5%), advertisements in newspapers (18.75%) and visits in schools and homes (16.25%). Posters/pamphlets, meetings and information stalls were suggested by very few respondents.

Suggestions for improving Stop TB Cricket: A variety of suggestions were offered to improve the game: 17.5% suggested that the game should have different types and levels, 16.25% wanted the content and language to be simpler, 13.75% wanted both male and female players in the game, 12.5% wanted better graphics and 10% wanted better readability in terms of larger font size and slower speed of scrolling of text.

Feedback from Experts- Analysis of messages appearing in the game

There were the total 16 messages in the game. It was found that the game contained no message on signs and symptoms of TB. A lay person identifies a disease by seeing certain signs and symptoms. Hence it was very important to have messages creating awareness about signs and symptoms of a disease. There were 3 messages on Causes, 4 messages on Diagnosis and Treatment, 5 messages on Prevention and Myths and Misconceptions and 1 General message on Tuberculosis.

Based on feedback from experts it was concluded that out of 16 messages in the game 1 message were rated as Excellent, 9 messages were rated Good, 6 messages were rated Average, none of the messages were graded as Poor and Very Poor. The suggestions given by the experts were used to revise the messages in the game. The revised messages can be incorporated in the next edition of the game by the game developer. Content analysis of the game gave valuable insights about the choice of language and nature of messages to be included in a game on Tuberculosis for mass distribution in Hindi language.

5. Conclusions and Recommendations

- Mobile Phone Gaming is an innovative media for presenting highly serious information by using the challenge and excitement offered by Games and the advantages offered by m-learning technology.
- This media can be used to disseminate development messages to remote and inaccessible regions in a cost and time efficient manner. These games can be used as tools in behavior change communication, creating awareness and giving information on sensitive issues.
- These games can be used by the gamers within the privacy of their homes as well openly in public places; either alone or with peer group, family members and colleagues at any time at the convenience of the player.
- New mobile phone edutainment games should be developed on issues like gender, environment, health, nutrition and on topics from the school syllabus of the youth. Such initiatives can be supported by the local government, NGOs, corporate, especially mobile phone manufacturers and network service providers, and other institutions concerned with development.
- Game developers and other organizations involved in the development of such edutainment games should have thorough knowledge of grass root realities and issues to ensure accuracy, adequacy and relevance of content and language.

- Games should be developed in local languages with superior graphics, sound effects and ease of controlling to enhance the gaming experience. This will help in attracting the young and technology savvy generation.
- Mobile phone edutainment games should be available on all mobile network service providers. They should allow free download of edutainment games to encourage widespread dissemination of development messages to the masses.
- These games should be widely publicized through the mass media to inform the public about the purpose and source of these games.
- Gaming competitions/tournaments can be organized at local, national and international levels to invite and involve the regular gamers and those interested in games/ sports. Winners of such events should be publically rewarded.
- Stop TB Cricket was liked by most of the youth. It was found to be effective in creating awareness about Tuberculosis.

6. Other Recommendations

Mobile phone edutainment games should be widely publicized through the mass media to inform the public about their purpose, source and method of acquiring. Gaming tournaments can be organized to create interest and awareness amongst the public about these games. Mobile phone edutainment games should be available for free download on all mobile network service providers to facilitate widespread dissemination of development messages to the masses.

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